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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/657,883	09/08/00	BLAKEMORE R	093719.00800

EXAMINER	
QM02/0829	

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ART UNIT	PAPER NUMBER
~~W00, R~~ 3745	4

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/657,883	Applicant(s) BLAKEMORE, RALPH W
	Examiner Richard Woo	Art Unit 3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

2. Applicant's citations of copending application have not been considered by the examiner because applicant failed to supply the actual serial numbers of the copending applications. If applicant wishes to have the copending applications, applicant should file form PTO-1449 with a request for a citation of the application.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "22". Correction is required.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the pitch riding retainers must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Objections

5. Claims 18-20 are objected to because of the following informalities:

In Claim 18, lines 15-16, "a generator incorporating a gear" should be changed to --the generator incorporating the gear--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 11 and 16-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 11, line 2, the recitation of "the mounting post" lacks antecedent basis.

In Claim 16, lines 15-16, the recitations of "if" and an alternative language, "or", render the claim indefinite because it is not clear whether the second rotor blades have a fixed pitch or a variable pitch.

Claim 18 encompasses the same indefiniteness as cited above.

In Claim 21, line 1, the recitation of "the ring gear" lacks antecedent basis.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 14 and 16, as far as they are definite, are rejected under 35 U.S.C. 102(b) as being anticipated by Bergey, Jr. (US 4,150,301).

Bergey discloses a shroud system for a wind turbine comprising:

a tower;

a nacelle (203) mounted on the tower;

a central hub (12);

a first connecting structure (16, 18) having a root portion and a tip portion, wherein the root portion is attached to the hub;

a shroud (20) having an internal surface and an external surface, wherein the internal surface is attached to the tips of the connecting structure;

a second set of connecting structure (22) having a root portion and a tip portion, wherein the root portion is attached in such an manner as to extend beyond the external surface of the shroud;

wherein the connecting structure comprises blades;

wherein the second set of blades is attached directly to the external surface of the shroud when the blades are fixed pitch (see Figs. 1, 4); and

wherein the shroud is a circular ring.

10. Claims 1-2, 4-5, 11 and 14, as far as they are definite, are rejected under 35 U.S.C. 102(b) as being anticipated by Smith (US 4,330,714).

Smith discloses a shroud system for a wind turbine comprising:

a central hub (33);

a first connecting structure (radially inner portions of 31) having a root portion and a tip portion, wherein the root portion is attached to the hub;

a shroud (32) having an internal surface and an external surface, wherein the internal surface is attached to the tips of the connecting structure;

a second set of connecting structure (radially outer portions of 31) having a root portion and a tip portion, wherein the root portion is attached in such an manner as to extend beyond the external surface of the shroud;

wherein the connecting structure comprises blades;

a plurality of rotatable drive shafts (34) extending radially outward from the external surface of the shroud in one-to-one correspondence with the second set of blades;

wherein the second set of blades are of variable pitch; and

wherein the shroud is a circular ring.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 12 and 17-20, as far as they are definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergey, Jr. in view of WO 87/05666.

Bergey discloses a shroud system for a wind turbine comprising:

a tower;

a nacelle (203) mounted on the tower;

a central hub (12);

a first connecting structure (16, 18) having a root portion and a tip portion, wherein the root portion is attached to the hub;

a shroud (20) having an internal surface and an external surface, wherein the internal surface is attached to the tips of the connecting structure;

a second set of connecting structure (22) having a root portion and a tip portion, wherein the root portion is attached in such an manner as to extend beyond the external surface of the shroud;

a strut (210) secured to the nacelle and extending radially outward from the nacelle;

a generator (208) mounted on the strut and in alignment with the shroud;

a drive wheel (207);

wherein the connecting structure comprises blades; and

pitch riding retainers (see Figs. 4-5).

However, Bergey, Jr. does not specifically disclose the turbine comprising:

a ring gear on the shroud; and

a driven gear on the generator and in engagement with the ring gear.

WO 87/05666 teaches, for a wind turbine, that the turbine comprises:

a generator (6) incorporating a gear (22) and being mounted on the support strut member (3);

a shroud (20) having a ring gear (21) for engaging the gear of the generator.

Since WO 87/05666 and Bergey, Jr. are both from the same field of endeavor, the purpose disclosed by WO 87/05666 would have been recognized in the pertinent art of Bergey, Jr..

It would have been obvious at the time the invention was made to a person having ordinary skill in the art, to replace the drive wheel system of Bergey, Jr. with the gears on the generator and the shroud, as taught by WO 87/05666, for the purpose of providing a simple design and easy maintenance.

13. Claims 6-9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Enos (US 2,670,050).

Smith discloses the invention as recited earlier and further includes:

each shaft (34) extending through the shroud and to the hub;

the shaft being carried within a corresponding of the first set of blades; and

a generator incorporating a driving wheel (101), which is on the external surface of the shroud.

However, Smith does not specifically disclose the turbine comprising:

a control motor for driving each shafts; and

wherein the control motor is mounted within the hub.

Enos teaches, for a shroud system, that the system comprises:

a first connecting blade (40) having a root portion and a tip portion, wherein the root portion is attached to the hub;

a shroud (34, 36) having an internal surface and an external surface, wherein the internal surface is attached to the tips of the first connecting blade;

a second set of connecting blades (28) having a root portion and a tip portion, wherein the root portion is attached in such an manner as to extend beyond the external surface of the shroud;

a plurality of rotatable drive shafts (24) extending radially outward from the external surface of the shroud in one-to-one correspondence with the second set of blades;

wherein the second set of blades are of variable pitch;

control system (52, 64) for driving each shafts; and

wherein the control motor is mounted within the hub (30) (see Fig. 2).

Since Enos and Smith are both from the same field of endeavor of controlling the second set of connecting blades through the first set of blades, the purpose disclosed by Enos would have been recognized in the pertinent art of Smith.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art, to mount the control system within the hub of Smith, as taught by Enos, for the purpose of providing a pitch control system in close proximity to

the structural support in such a manner to impart pitch changing rotation from the central hub to the remotely mounted blades.

14. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of WO 87/05666.

Smith discloses the invention as recited earlier and further includes a driving wheel (101) on the external surface of the shroud to engage a generator.

However, Smith does not specifically disclose the shroud system comprising:

the shroud including a ring gear for driving at least one generator; and

the ring gear being on the internal surface of the shroud.

WO 87/05666 teaches, for a wind turbine, that the turbine comprises:

a generator (6) incorporating a gear (22);

a shroud (20) having a ring gear (21) for engaging the gear of the generator; and

the ring gear being on the internal surface of the shroud.

Since WO 87/05666 and Smith are both from the same field of endeavor, the purpose disclosed by WO 87/05666 would have been recognized in the pertinent art of Smith.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art, to replace the drive wheel system of Smith with the gears on the generator and the shroud, as taught by WO 87/05666, for the purpose of providing a simple design and easy maintenance.

15. Claims 1-2, 6-10, 12-14 and 16-19, as far as they are definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 87/05666 in view of Enos.

WO 87/05666 discloses a shroud system for a wind turbine comprising:

a tower (1);

a nacelle (26) mounted on the tower;

a central hub (19);

a shroud (20) having an internal surface and a ring gear on the internal surface;

a connecting structure (5) having a root portion and a tip portion, wherein the root portion extends beyond the external surface of the shroud;

wherein the connecting structure comprises blades;

a plurality of drive shafts (16, 17) extending radially outward from the external surface of the shroud in one-to-one correspondence with the blades;

wherein each shaft extends through the shroud and to the hub;

a ring gear for driving at least one generator;

a support member (3) secured to the nacelle;

a generator (6) mounted on the support member and in alignment with the shroud; and

a driven gear on the generator and in engagement with the ring gear.

However, WO 87/05666 does not specifically disclose the shroud system for a wind turbine comprising:

an inner connecting structure having a root portion and a tip portion, wherein the root portion is attached to the hub;

the inner connecting structure being blades;

a plurality of rotatable drive shafts;

a control motor for driving each shafts;

wherein the control motor is mounted within the hub for controlling the angular position of the radially outer set of blades;

wherein the shaft is carried within a corresponding of the radially inner set of blades; and

wherein the radially inner set of blades is of fixed pitch.

Enos teaches, for a shroud system, that the system comprises:

a first connecting blade (40) having a root portion and a tip portion, wherein the root portion is attached to the hub;

a shroud (34, 36) having an internal surface and an external surface, wherein the internal surface is attached to the tips of the first connecting blade;

a second set of connecting blades (28) having a root portion and a tip portion, wherein the root portion is attached in such an manner as to extend beyond the external surface of the shroud;

a plurality of rotatable drive shafts (24) extending radially outward from the external surface of the shroud in one-to-one correspondence with the second set of blades;

wherein the second set of blades are of variable pitch;

control system (52, 64) for driving each shafts; and

wherein the control motor is mounted within the hub (30) (see Fig. 2).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art, to form the radially inner set of blades and the control system within the hub of WO 87/05666 such that wherein the drive shaft is carried within a corresponding of the radially inner set of fixed blades, as taught by Enos, for the purpose of providing a structural support for the radially outer blades, which are located remotely from the axis of rotation and a pitch control system in close proximity to the structural support in such a manner to impart pitch changing rotation from the central hub to the remotely mounted blades.

16. Claim 20, as far as it is definite, is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 87/05666 and Enos, as applied to claim 18 above, further in view of Bergey, Jr..

The modified shroud system of WO 87/05666 discloses the invention as recited above, but does not specifically disclose the system having a pitch riding retainer.

Bergey, Jr. teaches, for a wind turbine, that the turbine comprises a pitch riding retainers for maintaining proper driving alignment (frictional engagement) between the shroud and the drive wheel of the generator.

Since Bergey, Jr. and the modified shroud system of WO 87/05666 are both from the same field of endeavor, the purpose disclosed by Bergey, Jr. would have been recognized in the pertinent art of the modified shroud system of WO 87/05666.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art, to mount the pitch riding retainers between the ring gear and the gear of the generator of the modified shroud system, as taught by Bergey, Jr., for the purpose of providing the desired low torque gear engagement at start-up and also the required higher torque gear engagement at high speed.

17. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bergey, Jr., Smith or WO 87/05666.

Bergey, Jr., Smith or WO 87/05666 discloses the invention as recited above, but does not specifically disclose the shroud system comprising a polygonal shaped shroud.

Since applicant has not disclosed that having the polygonal shaped shroud solves any stated problem or is for any particular purpose above the fact that this shroud is shaped in such a manner to provide a structural support for the connecting blades; it appears that shroud of Bergey, Jr., Smith or WO 87/05666 would perform equally well with circular ring shaped shroud as claimed by applicant; and It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617F.2d 272, 205 USPQ 215 (CCPA 1980),

it would have been obvious at the time the invention was made to a person having ordinary skill in the art, to form the shroud of Bergey, Jr., Smith or WO 87/05666

such that the shroud is a polygonal shape, for the purpose of providing a structural support for the connecting blades.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lundquist is cited to show a pitch controlled wind turbine.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Woo whose telephone number is (703) 308-7830. The examiner can normally be reached on Monday-Friday from 9:30 AM -6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on (703) 308-1044. The fax number for this group is (703) 305-3463.Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0861.

Richard S. Woo
Patent Examiner
Art Unit 3745
August 25, 2001

EDWARD K. LOOK
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8/27/01